

## Claims:

1. An electrostatic chuck comprising:
  - a chuck base for supporting a wafer;
  - a dielectric film mounted on the chuck base, the dielectric film having an
  - 5 electrode for supplying direct current voltage to provide an electrostatic force necessary to fix the wafer, the electrode being disposed in the dielectric film; and
  - a cooling channel for supplying refrigerant to the dielectric film to control the temperature of the wafer, the cooling channel comprising:
    - at least two first cooling channel parts formed at the surface of the
    - 10 dielectric film corresponding to the edge part of the wafer such that the first cooling channel parts form concentric circles;
    - second cooling channel parts formed at the surface of the dielectric film such that the first cooling channel parts are connected to each other through the second cooling channel parts;
    - 15 first through channels formed through the dielectric film for supplying the refrigerant to the first and second cooling channel parts; and
    - a second through channel formed through the center of the dielectric film for supplying the refrigerant to the center of the wafer.
2. The chuck as set forth in claim 1, wherein the dielectric film is a
- 20 dielectric sheet comprising stacked dielectric sheet parts, between which the electrode is disposed, the dielectric sheet being attached to the chuck base while being compressed.
3. The chuck as set forth in claim 1, wherein the inside part of the first cooling channel parts, which is near to the center of the dielectric film, is disposed
- 25 within the distance corresponding to not more than 1/4 of the diameter of the wafer from the circumference of the dielectric film at the most.
4. The chuck as set forth in claim 1, wherein
  - the number of the second cooling channel parts is eight, and
  - the first through channels, whose number is equal to that of the second

cooling channel parts, are connected to the second cooling channel parts adjacent to the connections between the second cooling channel parts and the outside part of the first cooling channel parts, respectively.

5. A chuck base comprising:

- 5           a base body for supporting a chuck, on which a wafer is located; and  
          a cooling channel for cooling the chuck, the cooling channel comprising:  
              a curved part, which extends outward from the center of the chuck  
base under the surface of the chuck base, which is opposite to the chuck, in the  
shape of a cross; and  
10           a circular part connected to the curved part, the circular part being  
formed in the shape of a circle around the cross-shaped part.

6. The base as set forth in claim 5, further comprising:

- a connection part disposed between one end of the cross-shaped part and  
one end of the circular part for connecting the cross-shaped part and the circular  
15       part, whereby  
          the cooling channel begins at the other end of the cross-shaped part, and  
ends at the other end of the circular part.

7. The base as set forth in claim 5, wherein

- the base body is provided with four first through holes, through which lift  
20       pins for locating the wafer on the chuck are inserted, and  
          the cooling channel is curved such that the four first through holes are  
disposed between the cross-shaped part and the circular part, and the cross-shaped  
part extends around the first through holes.

8. The base as set forth in claim 5, wherein

- 25       the base body is provided with second through holes for supplying electric  
power necessary to generate an electrostatic force to the chuck, and  
          the cooling channel is curved such that the cross-shaped part extends  
around the inside parts of the second through holes.